

SN # 09/806,368 Filed: 3/28/01

WO 00/21998

PCT/IB99/01621

1

## SEQUENCE LISTING

<110> Hoechst Marion Roussel

<120> MATURE PROTEIN HAVING ANTAGONIST ACTIVITY AGAINST BONE MORPHOGENETIC PROTEIN.

<130> JH98KOll PCT SEQUENCES IN ENGLISH

<140>

<141>

<150> 10-288103

<151> 1998-10-09

<160> 7

<170> PatentIn Ver. 2.1

<210> 1

<211> 119

<212> PRT

<213> Human

<220>

<221> CHAIN

<222> (1)..(119)

<223> Mature MP52

<300>

<301> MAKISHIMA, Fusoa
 TAKAMATSU, Hiroyuki
 MIKI, Hideo
 KAWAI, Shinji
 KIMURA, Michio
 MATSUMOTO, Tomoaki
 KATSUURA, Mieko
 ENOMOTO, Koichi

SATOH, Yusuke

<302> Novel protein and process for producing the same.

<310> WO 96/33215

<312> 1996-1-0-24

<313> 1 TO 119

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Pro Leu Ala Thr Arg Gln Gly Lys Arg Pro Ser Lys Asn Leu Lys Ala 1 5 10

Arg Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met Gly Trp \$20\$ \$25\$ 30

Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys Glu
35 40 45

Gly Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His 50 55 60

Ala Val Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr Pro 65 70 75 80

Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe
85 90 95

Val Glu Ser Cys Gly Cys Arg 115

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His Pro Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn Asp Trp Ile 20 25 30

Val Ala Pro Pro Gly Tyr His Ala Phe Tyr CYs His Gly Glu Cys Pro

Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala Ile Val Gln
50 55 60

Thr Leu Val Asn Ser Val Asn Ser Lys Ile Pro Lvs Ala Cys Cys Val 65 70 75 80

Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu Asn Glu 85 90 95

Lys Val Val Leu Lys Asn Tyr Gln Asp Met Val Val Glu Gly Cys Gly 100 105 110 Cys Arg

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<301> WOZNEY, John M.
      ROSEN, Vicki
      CELESTE, Anthony J.
      MITSOCK, Lisa M.
      WHITTERS, Matthew J.
      KRIZ, Ronald W.
      HEWICK, Rodney M.
      WANG, Elizabeth A.
<302> Novel regulators of bone formation molecular clones
      and activities.
<303> Science
<304> 242
<305> 4885
<306> 1528-1534
<307> 1988-12-16
<308> Genbank/M22490
<313> 1 TO 116
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Ser Pro Lys His His Ser Gln Arg Ala Arg Lys Lys Asn Lys Asn Cys
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Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn Asp
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Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys His Gly Asp
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5

Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala Ile 50 55 60

Val Gln Thr Leu Val Asn Ser Val Asn Ser Ser 71 e Pro Lys Ala Cys 65 70 75 80

Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu 85 90 95

Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu met Val Val Glu Gly 100 105 110

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<301> OZKAYNAK, Engin
 RUEGER, David C.
 DRIER, Eric A.
 CORBETT, Clare
 RIDGE, Richard J.
 SAMPATH, Kuber T.
 OPPERMANN, Hermann

<302> OP-1 cDNA encodes an osteogenic protein in the TGF-beta family.

<303> EMBO J.

<304> 9

<305> 7

<306> 2085-2093

<307> 1990

<308> EM13L data library/X51801

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Asn Gln Glu Ala Leu Arg Met Ala Asn Val Ala G7-u Asn Ser Ser Ser 20 25 30

Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg 35 40 45

Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala 50 55 60

Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn 65 70 75 80

Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn Pro 85 90 95

Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile 100 105 110

Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr 115 120 125

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<222> (1)..(119)

<223> Mature MP52 protein. Note : 30th, 71st, 74th and 111th Met are modified to met sulfoxide.

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Pro Leu Ala Thr Arg Gin Gly Lys Arg Pro Ser Lys Asn Leu Lys Ala 1 5 10 15

Arg Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met Gly Trp 20 25 30

Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys Glu 35 40 45

Gly Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His 50 55 60

Ala Val Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr Pro 65 70 75 80

Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe 85 90 95

Ile Asn Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val 100 105 110

Val Glu Ser Cys Gly Cys Arg 115

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<222> (1)..(119)

<223> Mature MP52 protein. Note: 30th and/or 71st and/or 74th and/or 111th met are modified to s-carboxymethyl Met.

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Pro Leu Ala Thr Arg Gln Gly Lys Arg Pro Ser Lys Asn Leu Lys Ala

Arg Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met Gly Trp 20 25 30

Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys Glu 35 40 45

Gly Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His
50 55 60

Ala Val Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr Pro 65 70 75 80

Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe 85 90 95

Ile Asp Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val 100 105 110

Val Glu Ser Cys Gly Cys Arg 115 <210> 7

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<212> PRT

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<222> (1)..(119)

<223> Mature MP52 protein. Note :32nd and 35th Trp are modified to allylsulphenyl Trp.

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Pro Leu Ala Thr Arg Gin Gly Lys Arg Pro Ser Lys Asn Leu Lys Ala 1 5 10 15

Arg Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met Gly Trp
20 25 30

Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys Glu 35 40 45

Gly Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His 50 55 60

Ala Val Ile Gin Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr Pro 65 70 75 80

Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe 85 90 95

Ile Asp Ser Ala Asn Asn Val Val Tyr Lys Gin Tyr Glu Asp Met Val 100 105 110

Val Glu Ser Cys Gly Cys Arg 115